

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A method for processing a plurality of digital streams, wherein each digital stream includes packets sequenced for continuous presentation, said method comprising:

- receiving packets for each of said plurality of digital streams and storing said packets in a buffer;
- associating each of said packets with a respective stream of said plurality of digital streams;
- assigning a priority to each packet, said priority being determined according to a delivery deadline for each of said packets;
- assigning a tag to each to each packet identifying the assigned priority for the packet and an address of the packet in the buffer;
- storing each tag in memory corresponding to the respective digital stream associated with each packet;
- continuously monitoring the tags positioned at the memory output to identify the digital stream having the highest priority;
- retrieving the packet identified by the tag at the output of the memory corresponding to the identified highest priority stream from the buffer according to said address;
- determining when a new tag is present at the output of the memory after a gap in said tags for a particular one of the digital streams;
- establishing the priority of the digital stream corresponding to said new tag with respect to the priority of the other digital streams; and
- processing the packets from the plurality of data streams in order of priority.

2. (Cancelled)

3. (Currently Amended) The method of ~~claim 2~~ claim 1, further comprising:
selecting said packets for processing based on said priority; and
retrieving said selected packets from said buffer.
4. (Currently Amended) The method of ~~claim 2~~ claim 1, wherein:
said packets are retrieved in order of said priority.
5. (Previously presented) The method of claim 1, further comprising:
assigning a priority to each of said plurality of digital streams.
6. (Previously presented) The method of claim 5, wherein:
said assigning of said priority to each packet further comprises determining the priority of
the stream associated with each packet.
7. (Previously presented) The method of claim 1, wherein:
said priority is based on a current time interval before said deadline.
8. (Previously presented) The method of claim 7, wherein:
said deadline is derived from a Decoding Time Stamp extracted from an associated packet
header.
9. (Previously presented) The method of claim 1, wherein:
said packets of each digital stream are arranged in sequences of packets.
10. (Previously presented) The method of claim 9, wherein:
each sequence of packets is a representation of a video frame.

11. (Previously presented) The method of claim 9, wherein:
each sequence of packets is a representation of an audio frame.
12. (Cancelled)
13. (Cancelled)
14. (Cancelled)
15. (Previously presented) The method of claim 1, further comprising:
maintaining a state associated with each of said plurality of digital streams.
16. (Previously presented) The method of claim 15, wherein:
said state includes parameters for said processing of said packets of each stream.
17. (Previously presented) The method of claim 15, wherein:
said state includes pixel data representing at least one frame of video.
18. (Previously presented) The method of claim 15, further comprising:
allocating memory for storing said state.
19. (Previously presented) The method of claim 18, wherein:
said allocating memory includes recursively subdividing said memory into quadrants,
where one of said quadrants cannot be further subdivided without at least one dimension
becoming smaller than a corresponding dimension of a video or audio frame.

20. (Previously presented) The method of claim 18, wherein:

said memory is allocated in pages, where each of said pages is a contiguous memory unit of a fixed size.

21. (Previously presented) The method of claim 20, wherein:

unallocated pages are managed using a free list configured to manage unused pages of memory.

22. (Currently Amended) Apparatus for processing a plurality of digital streams, wherein each digital stream includes packets sequenced for continuous presentation, said apparatus comprising:

means for receiving packets for each of said plurality of digital streams and storing said packets in a buffer;

means for associating each of said packets with a respective stream of said plurality of digital streams;

means for assigning a priority to each packet, said priority being determined according to a delivery deadline for each of said packets;

means for assigning a tag to each to each packet identifying the assigned priority for the packet and an address of the packet in the buffer;

means for storing each tag in memory corresponding to the respective digital stream associated with each packet;

means for continuously monitoring the tags positioned at the memory output to identify the digital stream having the highest priority;

means for retrieving the packet identified by the tag at the output of the memory corresponding to the identified highest priority stream from the buffer according to said address;

means for determining when a new tag is present at the output of the memory after a gap in said tags for a particular one of the digital streams;

means for establishing the priority of the digital stream corresponding to said new tag with respect to the priority of the other digital streams; and

means for processing the packets from the plurality of digital streams in order of priority.

23. (Cancelled)

24. (Currently Amended) The apparatus of ~~claim 23~~ claim 22, further comprising:

means for selecting said packets for processing based on said priority; and

means for retrieving said selected packets from said buffer.

25. (Previously presented) The apparatus of claim 22, further comprising:

means for assigning a priority to each of said plurality of digital streams.

26. (Previously presented) The apparatus of claim 25, wherein:

said priority of each packet is further determined by the priority of the stream associated with each packet.

27. (Previously presented) The apparatus of claim 22, wherein:

said priority is based on a current time interval before said deadline.

28. (Previously presented) The apparatus of claim 26, further comprising:

a means for extracting a Decoding Time Stamp from an associated packet header, wherein said Decoding Time Stamp is used to derive said deadline.

29. (Cancelled)

30. (Cancelled)

31. (Cancelled)

32. (Previously presented) The apparatus of claim 22, further comprising:
means for maintaining a state associated with each of said plurality of digital streams.

33. (Previously presented) The apparatus of claim 32, wherein:
said means for maintaining a state includes a memory for storing processing parameters.

34. (Previously presented) The apparatus of claim 32, wherein:
said means for maintaining said state includes memory for storing pixel data representing at least one frame of video.

35. (Previously presented) The apparatus of claim 34, further comprising:
means for recursively subdividing said memory into quadrants.

36. (Previously presented) The apparatus of claim 34, further comprising:
means for partitioning said memory into pages, where each of said pages is a contiguous memory unit of a fixed size.

37. (Previously presented) The apparatus of claim 36, further comprising:
a free list for managing unused pages of memory.

38. (Previously presented) The apparatus of claim 36, further comprising:
a translation look-aside buffer for mapping virtual addresses to physical page addresses.

39. (Previously presented) The apparatus of claim 36, further comprising:

means for retrieving pages from memory and merging data into blocks of a requested size.

40. (Previously presented) The apparatus of claim 39, further comprising:

a cache for storing one or more pages that have been retrieved from memory.

41. (Withdrawn) A method of processing a plurality of streams of data, the method comprising: identifying a single stream of said plurality of streams; converting a subset of data corresponding to said identified single stream from a first format to a second format; and classifying a next subset of data for said single identified stream.

42. (Withdrawn) The method of claim 41 further comprising maintaining a state associated with each of said plurality of streams.

43. (Withdrawn) The method of claim 42 wherein said state includes data that represents one or more of video, audio and non-A/V data.

44. (Withdrawn) A method of scheduling a plurality of streams of data, the method comprising: classifying a first subset of data associated with a first stream to distinguish said subset of data from a second subset of data associated with a second stream; and selecting only said first subset of data for conversion from a first format to a second format during a first interval of time.

45. (Withdrawn) The method of claim 44, further comprising converting from said first format to said second format during which no other of said plurality of streams are converted.

46. (Withdrawn) The method of claim 45, further comprising maintaining a state associated with said second subset during said first interval, wherein said state includes data that represents one or more of video, audio and non-A/V data.

47. (Withdrawn) The method of claim 46, wherein said data represents video and includes pixel data representing at least one frame of video.

48. (Withdrawn) The method of claim 44, wherein classifying said first subset of data comprises: prioritizing said first and said second subsets of data; and tagging said first and said second subsets of data with a first priority and a second priority, respectively.

49. (Withdrawn) The method of claim 48, wherein said first priority and said second priority represent respective priorities for a first stream and a second stream.

50. (Withdrawn) The method of claim 48, wherein said first priority is associated with a first duration of time to a first deadline and said second priority is associated with a second duration of time to a second deadline, where said first duration is shorter than said second duration.

51. (Withdrawn) An apparatus for converting each stream of a plurality streams, the method comprising: a classifier module configured to assign a tag indicating a priority to data of each packet for each of said plurality of streams; a buffer associated with each of said plurality of streams and configured to store a subset of tags; and a packet scheduler module configured to select only one of said plurality of streams for conversion from a first format to a second format during a first interval of time.

52. (Withdrawn) The apparatus of claim 51, wherein a first packet of a frame is lower in priority than a second packet of said frame of one of said plurality of streams.

53. (Withdrawn) The apparatus of claim 51, further comprising a priority queue module configured to store the relative priorities associated with one or more subsets of tags.

54. (Withdrawn) The apparatus of claim 53, wherein said priority queue module is configured to provide a range of priorities to said packet schedule module for scheduling the conversion of data of said packet from said first format to said second format.